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Report by the Superintendent of Agriculture for 1932-33.

OFFICE OF AGRICULTURE—MALTA.

Valletta, 14th July, 1933.

Sir,

I have the honour to submit the following Report on the Agriculture in the Maltese Islands, "A" during the agricultural year commencing 1st September 1932, and on the working of the Department, "B" during the financial year 1932-33. This last includes the reports by the Plant Pathologist (Appendix F), by the Director of Experimental Farms and Agricultural Organizer (Appendix G), by the Superintendent of Public Gardens (Appendix H), along with a statement of Expenditure and Revenue (Appendix I).

"A". AGRICULTURE.

Meteorological Year.

2. The first rains fell on the 31st August and showery weather continued up to the 5th September, during which period the rainfall amounted to over two inches, and very soon followed the germination of sulla, winter-potatoes and barley sown as an early green forage crop. So that, taking the 1st October as the normal time for the commencement of the rainy season, the first germination of certain winter crops and the commencement of the agricultural year were anticipated by fully one month. However, these early showers were followed by a long spell of over four weeks of drought and hot weather which killed off a considerable proportion of seedlings of sulla which had just germinated. A change of weather took place on the 17th October and following days, with several violent thunderstorms. On the 17th, 18th and 19th October there was a rainfall of over three inches, and the weather continued more or less wet until the close of November, by which time the rainfall had reached twelve inches. Some rain fell in the first ten days of December, followed by dry and rather warm weather until the first week of January, when wet weather again set in with abundant rains, with a lowering of temperature and slight showers of hail, until the 28th January, when the total rainfall had reached 20.45 inches. After a few days of fine weather, rain fell again on the 9th and 10th February, and again on the 17th, with strong N.E. and E. winds.

3. A long period of dry weather followed up to the close of March, interrupted only by slight showers, but the weather continued cool, and the good condition of the soil was sustained. However, March was a very windy month, and in some localities the crop of spring potatoes, as well as of other produce, was damaged by the furious western and eastern winds. The month of April was excessively dry, and so also was the month of May, the parched condition of the soil being only partly discounted by the abundant dews. For all practical purposes the rainy season ceased on the 17th February, as the usual beneficial April showers, so much desired and relied upon by the farmer, having failed altogether. Of course, this dry weather was unfavourable for the proper development of growing and ripening crops, particularly so in the case of wheat, spring potatoes beans, peas, onions and cumin, and the subsoil became too dry to hold out much promise for the dry-farmed crops of summer.

The Honourable,
The Minister for Agriculture and Fisheries,
Valletta.

4. For this reason, the agricultural year which owing to the early incidence of the autumnal rains, and the abundant rains in the early winter months, as well as the comparatively mild temperature, was at first most promising, was very disappointing owing to the failure of one or two good showers in early spring. Accordingly, on the whole the agricultural year must be described as unsatisfactory, both from the point of view of production and of market prices, which were generally excessively low, and the healthy condition of most spring crops could not compensate for the reduced production caused by the scarcity or absence of rain in spring, or for the unremunerative prices. Other important contributory causes of depression to the farming industry consisted in the dumping of cheap and often subsidised foreign agricultural produce on our market and particularly the practice which has prevailed to such an extent as to become general, of importing fattened cattle ready for slaughter, instead of the usual store cattle which were formerly fattened in our farmsteads, thus creating a demand for locally grown, as well as for imported foodstuffs, all to the advantage of local trade and to the great relief of the farmers themselves.

Wheat.

5. The area under wheat was estimated at 9617 acres, as against last year's 9524 acres, viz: 7878 acres in Malta and 1739 acres in Gozo, there was therefore a reduction of the wheat acreage in Malta and a considerable increase of the acreage in Gozo, which last year stood at 1088 acres. The reduction of the acreage in Malta is due in great measure to the usual incidence of crop rotation; in Gozo the large increase is partly due to the fact that the cultivation of wheat as a pure crop is increasing in favour with the farmers and is gradually replacing that of meslin. The total production of wheat is estimated at 38082 quarters as against last year's production of 37,613 quarters, with an average production of 31.67 bushels per acre, which is slightly more than last year's average yield of 31.59 bushels per acre. There was the same shortage of rain in spring as was the case last year, and but for this scarcity of rain when most needed, the production would have been better. However, the weather continued cool throughout the whole period from the formation of the ear to the ripening of the grain, which was therefore well formed and plump, although the deficiency of moisture in the soil prevented the plant from tillering well, with a proportionate increase of stems and ears. The same sorts of wheat were grown as in former years, and the two local sorts, the red hard wheat grown chiefly on reddish soils, and the yellow hard wheat commonly preferred for whitish and clayey soils, constituted as usual the bulk of the crop in both Islands. Both sorts have been perfectly acclimatized during many years of cultivation, and are well known to our farmers for their resistance to drought and fungous diseases. Some samples of the yellow hard wheat compared favourably with the best imported hard wheats both in weight and appearance. However, other sorts of hard wheats are being grown in increasing proportion. Thus the Susa or Medeah wheat, known as Macaroni wheat in America where it is now extensively cultivated as the ideal wheat for the manufacture of paste. is now being grown in both Islands on a gradually increasing scale, and has proved particularly suitable for growing on grayish or clayey lands. Other sorts, such as the Australian Dreadnought and the Black-eared or Morocco wheat are also grown. Red-Fife or Manitoba 1st grade, as well as Amber durum or Sicily and Southern Italy are also tentatively grown by a few growers, and with encouraging results. As stated in last year's report, the above mentioned average yield per acre places these Islands in the front row of wheat producing countries, and the use of chemical fertilizers, especially the use of sulphate of ammonia and of superphosphates, which is slowly but steadily spreading, also for dry-farmed crops, will certainly result in a further increase of the average yield. Of course, as stated in last year's report, our methods of cultivation although very thorough and efficient are quite primitive, and therefore are frequently spoken of with contempt by those who fail to realise that owing to the extreme parcelling out of agricultural land, the shallow soils, and the hilly character of both Islands, the adoption of more up-to-date methods and implements is hardly possible, and I conclude by repeating from last year's report that, notwithstanding these drawbacks and the dry weather throughout last spring, if our primitive methods are to be judged by the results obtained, our farmers have every reason to be proud of their exertions.

Barley and Meslin.

6. The area under barley and meslin was estimated at 5633 acres, and includes 3477 acres of barley and 2156 acres of meslin. All the meslin was grown in Gozo, with the exception of 6 acres of meslin grown within the limits of the parish of Melleha (West District). On the other hand only 104 acres of barley were grown in Gozo, besides 48 acres grown as green barley or "ferrana", accounted for under *forages*. The drop in the total acreage of barley and meslin, as compared with that of last year (616 acres), is fully accounted for by the reduction of the acreage under meslin in Gozo, in favour of an increased acreage under wheat. The production is estimated at 18,997 quarters of barley and 10,738 quarters of meslin, as against last year's yield of 19,313 quarters of barley and 13,027 quarters of meslin. Meslin or "mischiato" was formerly much used for bread-making by the poorer classes, and then the mixture of wheat to barley consisted in the proportion of about two to one; but now it is mostly used for fattening pigs strictly poultry, and the former proportion is therefore not strictly adhered. Now it consists more often of equal parts of wheat and barley, by volume, or even of two parts of barley to one of wheat. The cultivation of meslin is rightly described as "dirty farming, but it is fairly frequent even in the more progressive countries, as a valuable source of grain for animal food, and as the yield per acre although mostly below that of barley, is always markedly larger than that of wheat, the cultivation of meslin is certainly advisable on economic grounds.

Other cereals.

7. The acreage under maize in the summer of 1932 was estimated at only 137 acres, that is only 24 acres in Malta and 113 acres in Gozo, with a production of 566 quarters. The preceding year's total acreage amounted to 381 acres, with a production of 1496 quarters. The fall in the acreage, as anticipated in last year's report, is due to the shortage of rain in the spring of 1932, maize being grown mostly as a dry-farmed crop, or rather as a catch-crop, when a wet spring permits the farmer to avail himself of the good condition of the soil. For this reason, there can be little hope for any improvement in the acreage of maize for the current year, as last spring was as dry as that of 1932.

8. The total acreage under cereals for the year under review therefore amounted to 15,387 on a total cultivable area of 43,058 acres and the production is estimated at 68,383 quarters. The average wholesale price of wheat, barley, meslin and maize, being respectively £2, £0. 18. 4, £1. 3. 4, £2, per quarter the total wholesale value of our crops of cereals may be estimated at £107,237. 11. 8.

Broad beans.

9. Beans were grown on an area of 1985 acres, as compared with last year's 1575 acres, and the yield is estimated at 8868 quarters as against last year's production of 5818 quarters. The production was good and would have been better but for the shortage of rain in early spring. Bean-aphis (Aphis rumicis) was hardly noticeable anywhere, owing to the early presence of the ladybird (Coccinella septempunctata) in the bean fields; but bean rust (Uromyces fabae) was troublesome in some localities, as so also was broomrape, particularly in those fields where the beans were sown too early, or immediately after the first rains. Green-beans for use as vegetables, were abundant and cheap; and as the cultivation of the broad bean under irrigation is being increasingly adopted, chiefly for the supply of the vegetable market, the supply of green beans continued abundant and cheap longer than usual.

Winter potatoes.

10. The area under winter potatoes amounted to 3009 acres, as against last year's 2670 acres, and the yield was estimated at 9333 tons, as compared with the 9473 tons of the preceding winter crop. There was therefore an increase of acreage, along with a reduced production. The early crop, more or less irrigated, covered an area of about 580 acres, but was very disappointing as to production, owing to the long spell of excessive heat in September, when the plants were already forming their

tubers. The later irrigated crop, being then still too young, escaped the ill effects of the heat wave, and the yield was very good, often reaching and exceeding six tons per acre. Unfortunately the unirrigated crop, which constitutes the bulk of our winter crop, and which had partly germinated soon after the first rains on the close of August and first days of September, suffered a check in its development by the long spell of dry weather which followed, and only partly recovered after the heavy rains towards the middle of October. There was also a rather widespread outbreak of late blight in the first week of December, which put an end to all further growth in those fields which were not sprayed with Bordeaux mixture, or which were inadequately treated. However, on the whole, the winter crop must be described as good, although in consequence of the attacks of blight, a certain percentage of the tubers had rotted away, either when still in the ground, or soon after it was lifted and stored. The prices were excessively low throughout the whole season, as there was hardly any demand for export, and an improvement in prices took place only towards the close of April, when there was not much chance for the farmers to profit by it.

Spring and Summer Potatoes.

11. Spring and summer potatoes were grown on an area of 3,875 acres, including only 177 acres in Gozo. Last year's total acreage under spring and summer potatoes amounted to 4,530 acres. This important decrease of acreage was due in great measure to the low prices realised by the winter crop, which discouraged the growers from extending the cultivation of this crop, and indeed many farmers found themselves unable to meet the outlay necessary for this cultivation. In fact the late importers of seed potatoes found it very difficult to dispose of the imported seed.

12. Imports of seed potatoes amounted to 26,785 bags "Champions", 4,386 bags "Invincibles", 4,511 bags "Up-to-dates", a total of 35,682 bags, or approximately 3,568 tons. Besides these the following imports were made, viz: 1,000 half-bags Sharpe's Express, 1,183 half-bags Engenheimer, 750 half-bags Wilde Duc, 400 half-bags Arran Banner, and 470 half-bags of various other varieties; a total of about 190 tons. Last year's total imports of seed potatoes amounted to 43,828 bags. On the whole the seed potatoes imported were sound, with the exception of a few small consignments of Invincibles, Up-to-date and Sharpe's Express. Besides the imported "seed", rather extensive sowings were made with local seed saved from the winter crop of White Hebron or White Elephant in the West and Central Districts, as well as of Sharpe's Express, the well known kidney sort, which appears to be rapidly gaining in favour as a late irrigated crop for local consumption, and is likely to replace White Hebron for the summer crop.

12. Spring potatoes suffered to some extent from slight but widespread outbreaks of blight (Phytophthora infestans), and the dry condition of the soil during the whole period of development of the tubers, could only result in a poor yield, except where water was available for irrigation, and accordingly good or very good production was recorded only in the case of that part of the main crop where it was possible to irrigate three or four times from the close of March to the first week of May.

13. The production of the spring and summer crop of potatoes was estimated at 10,822 tons, as against last year's production of 15,723 tons, which was also a poor year for potatoes. These figures compare ill with the production of 1931 which amounted to 19,535 tons from 3,934 acres. However, the tubers were of fine quality and on the whole perfectly sound, and the unexpected improvement of prices towards the close of April and in May, helped to compensate in part for the poor yield.

Spraying.

14. Spraying with Bordeaux mixture was very largely applied by the growers as the best preventive against blight, and extensive practical demonstrations in spraying for the instruction of growers were also made by the Department in all districts. It is

estimated that as a result of the propaganda made by the officers of this Department about two thirds of the total area under spring potatoes was sprayed from 2 to 4 times. Winter potatoes were also sprayed very extensively, particularly in the central and eastern districts, and owing to the action taken by the Government the sulphate of copper supplied for agricultural purposes is uniformly of guaranteed quality, and 98/99% purity. There are now 49 licensed dealers who sell sulphate of copper of good quality, under Government control. The prices of spring potatoes varied from 10/- to 16/8d per cantar, but the bulk of the crop of Champions was sold at 14/2d per cantar, or about £9 per ton, and this may be taken as the average price of the entire spring and summer crop, which may therefore be valued at £97,398.

14. The protective tariffs imposed by the British Government on foreign produce, in favour of home and imperial produce, raised the hopes of our exporters of agricultural produce to obtain a better hold on the home markets. With this object in view an association of local dealers besought the Government to assist their action in the matter by instituting a series of prizes to be awarded to growers of early potatoes for the English markets. The assistance asked for was freely given and a number of substantial prizes were promised to growers of specified sorts of kidney potatoes, on a rising scale in point of earliness and other qualities, as appreciated on the London market. On their part the Association undertook to import seed of suitable varieties, chiefly Sharpe's Express, and 50 tons (1,000 cwt. bags) of this potato were imported from Scotland on the 28th November 1932, to be sold as seed to the growers. Unfortunately, these potatoes consisted mostly of ware potatoes of large size, and were imported too early, even for an early crop "scrapers". It should be remembered that northern potatoes immediately on arrival in these Islands, feel the effects of the mild climate and begin to sprout, and therefore must either be sown at once, or will lose much of their vigour if kept for any length of time. As it happens, Sharpe's Express and other kidney potatoes of fine quality, are rather delicate, and therefore liable to suffer severely from bad weather if sown in mid-winter. It was expected that the Association would import further batches of "seed", but unfortunately this was not done, and for want of a supply of good seed in its proper season, the results obtained were far short of the assistance given by Government in the shape of prizes. However, there is little doubt that, with the favourable tariff duties now in operation, a brisk export trade in early spring potatoes, for the English market, will become an accomplished fact, and that our exporters will learn that it is in their interests to send only potatoes which are properly selected, graded and packed, as required on the London market.

15. Onions were grown on an area of 1394 acres, as against last year's 1219 acres; and the production is estimated at 9442 tons as compared with last year's estimate of 8685 tons. The increase in area is due partly to the fact that last year onions were sold for export at prices, which although not very remunerative, at least left some margin of profit to the grower, and partly to the fact that the seed-beds of onions last autumn were very healthy, and supplied enough seedlings to plant out the full extent which the grower had meant to plant. Notwithstanding the scarcity of rain in spring, onions favoured by the cool weather, made good growth and were very healthy, but of course the deficiency of moisture in the soil resulted in a reduced size of the bulbs, so that in weight the production was somewhat deficient. However, the onions, without being excessively large, were of the most desirable size for the export market, and the prices realised were fairly good. The large white flat or Tripoli onion usually grown on the land between Attard and Notabile is entirely reserved for local consumption, as it keeps and travels very badly, but is preferred by the local consumer for its good quality for the kitchen. The local yellow-top-shaped onion, usually exported in June-July is largely grown in the East District; and the late keeping sort, red and yellow, are grown chiefly at Siggieui and Dingli, in the West District. The light yellow round onion of the true Spanish export type originally distributed by this Department, is being increasingly grown in the West District, and due care is taken by the growers to keep it true to type.

Cumin

16 The area under cumin amounted to 1095 acres, which is a further fall on last year's 1224 acres; and the production is estimated at 4991 cwts., as against last year's production of 5494 cwts. The prices of cumin continue at a low and unremunerative figure, and this explains the dwindling acreage. This year's crop, although reduced in acreage and below the normal in yield per acre, is very fine indeed, the grains or seeds having reached full development and are plump, well-coloured and heavy, owing to the cool and cloudy weather during the critical days when it was ripening. It is also perfectly sound, and free from the ravages of insects and fungous diseases.

Cotton

17. The area under cotton in the summer of 1932 was only 66 acres, including 37 acres in Gozo. This is the lowest figure reached for many years past. Last year's total acreage amounted to 334 acres, and was the lowest for the last ten years. Thus the cultivation of cotton threatens to become a thing of the past, and the ruling very low prices of cotton, as well as the over-production of cotton of the finest quality in other countries with more favourable conditions of climate, land and labour, holds out very little hope for a real revival of this cultivation in the Maltese Islands. This is a great pity as these Islands were famous for the cultivation of cotton since Phoenician days, and this cultivation continued, more or less prosperously, up to the present To the untoward conditions abovementioned, it is necessary to add that the dry spring of 1932 was most unfavourable to the cultivation of cotton as a dry-farmed crop, and as the spring of 1933 is just as dry or more so than that of last year, and the same general conditions still prevailing in the world markets, an improvement in the acreage of cotton for next year is hardly expected. The production of cotton for 1932 was estimated at only 16,325 lbs. as compared with the preceding year's 80,779 lbs. The cultivation of cotton in these Islands is not handicapped by the presence of deleterious pests, such as the Boll-weevil in America, and the Pink-boll moth in Egypt, etc., but the advantages accruing from this absence of serious diseases and pests, is more than discounted by the unfavourable conditions, general and local, above referred to.

Forages

18 The total area under forages amounted to 12,348 acres, almost exactly the same as that of last year, which amounted to 12,346 acres, but rather differently distributed both in regard to the district and to the type of forage. Thus sulla was grown on 7584 acres as against last year's 7302 acres; vetches were grown on 2535 acres as compared with last year's 2387 acres; caterpillar plant was grown on 1560 acres, as against last year's 1850 acres; and green barley (ferrana) was grown on 669 acres as against last year's 807 acres. This year's total production of forages is estimated at 457,270 *some* of 10 bundles, which is a considerable decrease on last year's total of 800,266 *some*, a decrease which is in great measure compensated by the excellent quality of this year's crop, as will be detailed hereunder. The crop of sulla is estimated at 242,375 *some;* vetches are estimated at 102,780 *some;* caterpillar plant is estimated at 76,560 *some;* and green barley (ferrana) at 35,555 *some.*

19. The germination of sulla was at first seriously affected by the prolonged dry weather after the first autumnal rains. But fresh batches of seed germinated with the resumption of wet weather. The subsequent development was normal, and perfectly free from disease. The harvesting was carried out under very favourable conditions, with the result that although the crop fell far short of that of last year, as to yield in bundles, it was quite exceptional as to quality. So also the development of vetches was rather poor in foliage, but left nothing to be desired in regard to the quantity of pods and the quality of the grain. As usual these vetches consisted mostly of the White Vetch or Chickling Vetch (Lathyrus Ochrus) more or less mixed with Pisum alatius. The common Tare of Vetch (Vicia sativa) is not much grown, being more liable to suffer from pests and diseases, but the Bitter Vetch (Vicia Ervilia) is largely grown, and often as a catch crop.

Vegetables.

20. The area under vegetables amounted to 3,045 acres, with an estimated yield of 221,119 cwts. Last year's figures were respectively 2,223 and 158,108 cwts. Vegetables were cheap and abundant throughout the whole season. It was only in March that there was an appreciable rise in case of late cauliflowers and cabbages. Globe artichokes fetched good prices, owing to part failure of the crop in certain localities. Early in February there was a veritable glut in the vegetable market, and for some days the growers were sending their vegetables to the wholesale greengrocer, at prices which hardly paid for their packing and transport. Owing to the dry spring, dry-farmed vegetable-marrows and late peas were rather scarce, and fetched good prices. The late irrigated cabbages also fetched good prices, and the prices for all irrigated summer vegetables, viz: aubergines, capsicums, lettuces, French-beans, long gourd, etc. were fairly satisfactory, though at times there were momentary gluts, probably owing to irregularity of supply. The Savoy cabbages are being increasingly preferred, and their cultivation is extending. However, this type of cabbages, although so attractive to the eye, requires the heavy frosts of northern countries, to develop its qualities to perfection, and in our mild winters, it is more often the case that the Savoy cabbages retain a flavour too strong to be generally pleasing.

Tomatoes.

21. The area under tomatoes during the summer and autumn included here, under that of vegetables, amounted to a total of 287 acres, with an estimated production of 22,000 cwts. The quality was good, particularly that of the late irrigated crop ripening in September-October. Dry-farmed tomatoes were excessively cheap in July and August, and considerable quantities were devoted to the manufacture of sauce and extract. This estimate does not include the very many small batches of tomatoes which are grown in summer almost everywhere in both Islands, each small in extent, but large in the aggregate, and whose produce, no doubt, contributes to reduce the selling capacity of retailers.

22. It is to be hoped that with the expected revival of our canning industry on sound commercial lines, there will be a notable improvement in the type of tomatoes required for this industry and for the manufacture of sauce on more extensive scale.

Melons.

23. Melons and water melons are here also classed under vegetables, although in many cases they are cropped on land which had been under another crop earlier in the season, and therefore are to be considered as a secondary or catch crop. Last summer the total area under melons and watermelons in both districts amounted to 620 acres, of which fully 389 acres were in Gozo. The production is estimated at 32,156 cwts., which were entirely taken up by our markets. Notwithstanding the dry spring the crop was fairly abundant, but was often rather lacking in quality owing to the mildness of the summer, the melon requiring a warm summer to bring out its best qualities.

Citrus Fruits.

24. The crop of Citrus fruits was estimated at 148,090 dozen, which compare well with the preceding year's 69,765 dozen. On the whole it was a very good year for all sorts of Citrus fruit, and would have been better, were it not for the ravages of the fruit-fly (Ceratitis capitata) which wrought serious havoc in many groves.

25. There has been no change in the area under Citrus trees, which remains at 188 acres. No new groves are being planted, and although there is a brisk demand for young trees, these are mostly required to replace older or decayed trees, or to plant in the small gardens and courtyards attached to new buildings. Good egg-blood oranges were sold wholesale at about four pence a dozen, and lemons of good size very often fetched only one penny per dozen. It is evident, that these prices cannot encourage growers to go through the expense of planting orange groves, with the usual accompaniment of reservoirs of adequate size for the storage of water for irrigation, and of

high stone boundary walls, as a protection from wind and pilferers. Of course, apart from any consideraion of a revival of the ancient export trade of Malta oranges, there is considerable scope for expansion of this cultivation to meet local requirements. In fact, this year the imports of Citrus fruits, mostly from Sicily, amounted to about 514,154 dozen oranges and 183,113 dozen lemons and other citrus fruits, or about 5 times the local production. Without going to the expense of formal groves in the old style, there are several sheltered valleys with suitable soil, and fairly good water supply, where the cultivation of Citrus trees could be largely extended, to replace in part the cultivation of vegetables with which the market is often glutted.

Other Fruits,—Grapes.

The acreage under fruit trees is returned at 2,892 acres, including 1,872 acres of vines, and this represents a small advance on last year's 2,846 acres. The total production is estimated at 223,349 cwts., as against last year's production of 169,746 cwts. This year's total includes also 151,550 cwts. of grapes. In this total the production of fruits in small gardens and yards, pergolas, etc., is not taken into consideration, although it must have been considerable in the aggregate.

26 The total quantity of grapes available for the press is estimated at 150,000 cwts. (equivalent to 96,000 cantars), the balance of 1550 cwts, along with the production of vines along walls of fields, in gardens etc. being sufficient to meet the local consumption of fresh grapes. These 96,000 cantars of grapes, at the rate of 1 "barile" and 1 "quartara" or "giarra" per cantar, should have yielded 120,000 "barili" of wine, or 1,140,000 Imp. gallons.

27. The Minister of Agriculture has instituted a Vintners' Competition, in which leading vintners in both Islands took part. The samples of wine were of this year's vintage and were generally satisfactory notwithstanding their unavoidable lack of maturity and mellowness, and the untoward climatic conditions just before the vintage and during fermentation, as well as notwithstanding the primitive apparatus and technique at the disposal of the wine-makers. The competition was a success from various points of view, praticularly from the standpoint of demonstrating the necessity of a thorough organization of the industry, and of standardizing first the produce of the vineyard and then the produce of the wine-press.

28. This year all stone-fruits, and indeed all sorts of fruit-trees, produced a very abundant crop. All stone-fruits were very cheap throughout the season, apples being retailed at the rate of about 1d per lb. Many fruits, especially the types most subject to the ravages of the fruit-fly were not even gathered in, and consequently afforded an excellent breeding ground for the fruit-fly. So also the crop of prickly pears, which was also very abundant was partly fed to pigs, and partly allowed to become over-ripe and dropped down under the trees, a prey to the fruit-fly. Owing to the abundance of other cheap and better fruits, very little of the crop of prickly pears was marketed for human consumption. Consequently after the few rainy days in the beginning of September, during the long period of heat and drought which followed, the third and fourth generation of the fruit-fly appeared in vast numbers and resorted to the orange-groves to work havoc on the orange-crop, which this year's was also most promising and abundant. However, notwithstanding the presence of the fruit-fly, the crop of stone-friuts as well as the crop of oranges and lemons was very satisfactory in regard to quality and quantity, although the prices were often excessively low.

Reconstitution of Vineyards.

29. The reconstitution of vineyards on American stock is now proceeding satisfactorily in both Islands. Last planting season 177,214 rootlings and graftlings of American vines were supplied from the Government Nurseries in Malta and Gozo, besides the many thousands of rootlings raised by the growers themselves. The new nursery at Sammat near the Addolarata Cemetery, is now in full working order, and

last winter over 150,000 cuttings were planted there for the supply of rootlings. The mother plants planted there are also thriving very satisfactorily Before the old vine nursery at Tarscien is disposed of for building sites, it is not unlikely that the Sammat nursery will have to be extended, in order to be able to raise enough rootlings to meet the increasing demands.

The Wine-industry.

30. Although the vine-nurseries are now properly organized, and the reconstitution of vineyards on American vines has made satisfactory progress, the wine-industry is still in a very unsatisfactory condition. As there has been no attempt to standardize our wines, it follows that the vinegrower is interested only in raising a heavy crop, irrespective of quality, and accordingly the reconstituted vineyards are being grafted with heavy yielding varieties of grapes, which are of inferior value as wine-producers. Here and there, a few growers acting on the advice of this Department, have planted their vineyards with good sorts of wine grapes, but as the wine-makers, disorganized as they are, make little distinction between grapes which are suitable for the press and those which are not, and are induced with difficulty to pay a higher price for the better article, the grower has no inducement to discard inferior types of grapes, particularly if they happen to be more productive in weight. It is obvious that in our circumstances, and with a large number of small wine-makers, no real reform is possible except through Government action.

31. The estimated acreage of the various crop in 1932-33 is given in Appendix "A", and the estimated production is shown in Appendix "B". The prices of agricultural produce during the year are shown in Appendix "C", and its wholesale value to the grower, calculated on the average market prices, is given in Appendix "D". The returns of livestock on the 31st December 1932, as compared with those of the preceding year are given in Appendix "E".

Animal Husbandry.

32. To the many disadvantages against which our Animal Husbandry has been waging an uneven war, another was added quite recently, viz: the importation of cattle ready fattened for slaughter, instead of the time-honoured practice of importing store animals to be fattened in the cow-shed by the farmers, which practice besides providing meat of superior quality, and greatly benefiting the farmers, stimulated the import trade in foodstuffs for animals, favoured a more intensive local cultivation of foodstuffs, and provided a constant supply of cow-shed manure of the best quality for keeping up the fertility of the soil. It is expected that before long adequate steps will be taken to checkmate this new danger to our agriculture.

33. Both the farmers and the general public are now aroused to the urgent necessity of providing for the improvement of our animal husbandry in general, and in the current Estimates through the keen interest of the Minister of Agriculture, funds have been provided for remodelling and extending the buildings of the Government Ghammieri Farm, with a view to start dairying with suitable breeds of dairy cattle, as well as to start pig-breeding and poultry-farming, with selected breeds and with the necessary modern equipment. The Government Farm will thus become the starting point for a diffusion of improved breeds of farm animals, and of improved methods of animal husbandry. It is also intended to establish a subsidiary centre of animal husbandry in Gozo, for the instruction of the Gozo farmers and for the improvement of farm animals in that Island.

34. Even as it is, the animal value of our animal industry is little inferior to that of our field and orchard produce, and is capable of being largely extended and improved, so as to retain in these Islands, if not all at least a large proportion of the money which is being expended on the importation of animal produce to meet the large and ever increasing requirements of a teeming population. With a sound agricultural policy, it is not improbable that this very desirable result may become an accomplished fact within a few years.

35. Act No. XXXIX of 1933 amending Ordinance III of 1917, and imposing protective duties on certain imports, in favour of the more important agricultural produce of these Islands, was hailed with delight by all farming classes, as soon as the provisions of this Act became effective by the Proclamation of the 12th June last. It cannot be doubted that the assistance and protection now extended to our agriculture by the various provisions of this Act have arrived just in time to save our principal industry from a total collapse, and to revive the hopes of our farmers in better times. Our people were late in grasping the absolute necessity of protective duties, to set off the deleterious effects of the dumping of foreign produce which could be sold cheaply as a result of cheap labour, and of elaborate systems of bounties etc. However, at last not only the farming classes, but the public in general has agreed that a system of protective tariffs has become indispensable, and the merits of this fateful measure are all to the credit of the present Minister for Agriculture, who has spared no pains to place the present requirements of our agriculture before the country.

I have, etc.,

J. Bond,

Superintendent of Agriculture.

Appendix A.

Area of the various crops 1932-33.

	Locality	Nature of the crop and number of acres of land in each crop.													
		Wheat	Barley	Beans	Potatoes	Onions	Cumin	Citrus fruits	Other fruits	Vegetables	Cotton	Forages	Pasture	Total No. of acres in crop	No. of acres of uncultivated land
Valletta Dist.	Valletta	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Floriana	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Hamrun & Marsa ...	55	30	16	20	4	6	1	6	18	—	97	2	255	26
	Misida & Pietà ...	37	15	4	25	1	5	2	3	5	—	43	1	141	3
	Sliema	23	6	—	12	—	2	1	2	8	—	28	1	83	2
	St. Julians	61	22	8	40	2	3	2	8	6	1	68	2	223	10
Total Valletta District ...		176	73	28	97	7	16	6	19	37	1	236	6	702	41
East District	Senglea	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Cospicua	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Vittoriosa	—	3	1	4	—	—	—	2	2	—	—	—	12	3
	Zabbar & Calcara ...	136	172	146	156	99	2	3	28	174	1	374	23	1,314	49
	Zeitun	180	191	137	138	118	21	2	15	82	—	422	11	1,317	20
	Marsascirocco... ...	79	88	24	108	84	57	—	15	40	1	234	14	744	24
	Tarxien & Paula ...	140	128	49	105	82	30	3	33	50	1	250	3	874	12
	Luca	136	158	42	96	88	32	4	39	52	—	245	4	896	24
	Micabiba	105	66	2	64	13	6	2	65	2	—	112	8	445	18
	Krendi	170	85	5	88	25	17	2	44	3	1	182	20	642	90
	Zurrico & Safi ...	520	430	13	182	40	23	5	54	5	—	396	32	1,700	69
	Gudia & Chircop ...	165	163	34	115	95	24	2	32	45	1	304	18	998	42
	Birzebbugia	187	208	64	215	112	52	1	50	27	1	281	46	1,244	80
	Axiak	85	86	15	78	55	24	1	15	32	1	208	10	610	48
Total East District ...		1,903	1,778	532	1,349	811	288	25	392	514	7	3,008	189	10,796	479
Central District	Naxaro Central ...	366	150	17	178	6	55	3	41	55	5	369	20	1,265	400
	Birchircara and Sta. Venera	255	84	45	492	30	21	7	45	220	4	353	13	1,569	54
	Gargur...	198	73	12	106	5	32	1	34	8	3	214	22	708	240
	Musta	115	33	7	85	3	21	10	28	3	3	128	19	455	75
	Lia & Balzan... ...	76	28	9	94	3	13	29	20	38	1	140	—	451	5
	Attard	205	95	12	106	28	18	17	20	75	1	292	2	871	24
	Zebbug...	260	103	81	116	92	83	12	47	73	1	484	6	1,358	21
	Curmi	280	184	43	90	24	23	10	50	188	—	341	14	1,247	18
Total Central District ...		1,755	750	226	1,267	191	266	89	285	660	18	2,321	96	7,924	837
West District	Notabile	405	40	42	26	23	18	1	71	147	—	313	10	1,096	6
	Rabato...	831	117	122	150	107	26	6	309	395	—	837	20	2,920	343
	Dingli	209	76	33	38	49	8	2	89	130	—	218	23	875	210
	Siggieui	478	105	143	144	125	152	39	98	248	2	552	66	2,152	292
	Imgiar	710	253	42	230	31	108	1	185	75	1	484	98	2,218	172
	Melleha	656	60	126	122	12	—	2	123	406	—	682	43	2,232	216
	St. Paul's Bay ...	595	55	78	215	13	9	2	86	225	—	564	28	1,870	115
	Naxaro, West... ...	160	72	7	60	2	23	1	37	5	—	129	10	506	347
Total West District ...		4,044	778	593	985	362	344	54	998	1,631	3	3,779	298	13,869	1,701
Total Malta		7,878	3,379	1,379	3,698	1,371	914	174	1,694	2,842	29	9,344	589	33,291	3,058
Gozo	Victoria (Gran Fontana)	121	208	38	21	1	11	1	125	36	3	309	6	880	24
	Kercem	214	235	45	12	—	2	1	73	8	3	298	18	909	37
	S. Lorenzo	180	102	30	7	—	—	—	24	4	5	191	11	554	27
	Garbo & Ghasri ...	230	260	65	37	1	3	—	48	22	16	282	16	980	106
	Zebbug...	182	378	92	9	1	2	2	104	7	4	547	12	1,340	25
	Xaghra...	140	262	71	22	1	1	5	161	30	—	290	32	1,015	38
	Nadur	105	214	76	8	1	—	4	341	31	—	207	45	1,032	56
	Kala	88	160	60	14	2	15	—	184	22	—	217	8	770	30
	Ghainsielem & Comino	150	230	52	20	5	9	1	70	18	1	351	40	947	76
	Xeuchia	95	60	21	17	6	20	—	32	1	1	98	45	396	80
	Sannat & Munxiar ...	234	145	56	10	5	118	—	36	24	4	214	98	944	94
Total, Gozo...		1,739	2,254	606	177	23	181	14	1,198	203	37	3,004	331	9,767	593
Grand total		9,617	5,633	1,985	3,875	1,394	1095	188	2,892	3,045	66	12,348	920	43,058	3,651

high stone boundary walls, as a protection from wind and pilferers. Of course, apart from any consideraion of a revival of the ancient export trade of Malta oranges, there is considerable scope for expansion of this cultivation to meet local requirements. In fact, this year the imports of Citrus fruits, mostly from Sicily, amounted to about 514,154 dozen oranges and 183,113 dozen lemons and other citrus fruits, or about 5 times the local production. Without going to the expense of formal groves in the old style, there are several sheltered valleys with suitable soil, and fairly good water supply, where the cultivation of Citrus trees could be largely extended, to replace in part the cultivation of vegetables with which the market is often glutted.

Other Fruits,—Grapes.

The acreage under fruit trees is returned at 2,892 acres, including 1,872 acres of vines, and this represents a small advance on last year's 2,846 acres. The total production is estimated at 223,349 cwts., as against last year's production of 169,746 cwts. This year's total includes also 151,550 cwts. of grapes. In this total the production of fruits in small gardens and yards, pergolas, etc., is not taken into consideration, although it must have been considerable in the aggregate.

26 The total quantity of grapes available for the press is estimated at 150,000 cwts. (equivalent to 96,000 cantars), the balance of 1550 cwts, along with the production of vines along walls of fields, in gardens etc. being sufficient to meet the local consumption of fresh grapes. These 96,000 cantars of grapes, at the rate of 1 "barile" and 1 "quartara" or "giarra" per cantar, should have yielded 120,000 "barili" of wine, or 1,140,000 Imp. gallons.

27. The Minister of Agriculture has instituted a Vintners' Competition, in which leading vintners in both Islands took part. The samples of wine were of this year's vintage and were generally satisfactory notwithstanding their unavoidable lack of maturity and mellowness, and the untoward climatic conditions just before the vintage and during fermentation, as well as notwithstanding the primitive apparatus and technique at the disposal of the wine-makers. The competition was a success from various points of view, praticularly from the standpoint of demonstrating the necessity of a thorough organization of the industry, and of standardizing first the produce of the vineyard and then the produce of the wine-press.

28. This year all stone-fruits, and indeed all sorts of fruit-trees, produced a very abundant crop. All stone-fruits were very cheap throughout the season, apples being retailed at the rate of about 1d per lb. Many fruits, especially the types most subject to the ravages of the fruit-fly were not even gathered in, and consequently afforded an excellent breeding ground for the fruit-fly. So also the crop of prickly pears, which was also very abundant was partly fed to pigs, and partly allowed to become over-ripe and dropped down under the trees, a prey to the fruit-fly. Owing to the abundance of other cheap and better fruits, very little of the crop of prickly pears was marketed for human consumption. Consequently after the few rainy days in the beginning of September, during the long period of heat and drought which followed, the third and fourth generation of the fruit-fly appeared in vast numbers and resorted to the orange-groves to work havoc on the orange-crop, which this year's was also most promising and abundant. However, notwithstanding the presence of the fruit-fly, the crop of stone-friuts as well as the crop of oranges and lemons was very satisfactory in regard to quality and quantity, although the prices were often excessively low.

Reconstitution of Vineyards.

29. The reconstitution of vineyards on American stock is now proceeding satisfactorily in both Islands. Last planting season 177,214 rootlings and graftlings of American vines were supplied from the Government Nurseries in Malta and Gozo, besides the many thousands of rootlings raised by the growers themselves. The new nursery at Sammat near the Addolarata Cemetery, is now in full working order, and

last winter over 150,000 cuttings were planted there for the supply of rootlings. The mother plants planted there are also thriving very satisfactorily Before the old vine nursery at Tarscien is disposed of for building sites, it is not unlikely that the Sammat nursery will have to be extended, in order to be able to raise enough rootlings to meet the increasing demands.

The Wine-industry.

30. Although the vine-nurseries are now properly organized, and the reconstitution of vineyards on American vines has made satisfactory progress, the wine-industry is still in a very unsatisfactory condition. As there has been no attempt to standardize our wines, it follows that the vinegrower is interested only in raising a heavy crop, irrespective of quality, and accordingly the reconstituted vineyards are being grafted with heavy yielding varieties of grapes, which are of inferior value as wine-producers. Here and there, a few growers acting on the advice of this Department, have planted their vineyards with good sorts of wine grapes, but as the wine-makers, disorganized as they are, make little distinction between grapes which are suitable for the press and those which are not, and are induced with difficulty to pay a higher price for the better article, the grower has no inducement to discard inferior types of grapes, particularly if they happen to be more productive in weight. It is obvious that in our circumstances, and with a large number of small wine-makers, no real reform is possible except through Government action.

31. The estimated acreage of the various crop in 1932-33 is given in Appendix "A", and the estimated production is shown in Appendix "B". The prices of agricultural produce during the year are shown in Appendix "C", and its wholesale value to the grower, calculated on the average market prices, is given in Appendix "D". The returns of livestock on the 31st December 1932, as compared with those of the preceding year are given in Appendix "E".

Animal Husbandry.

32. To the many disadvantages against which our Animal Husbandry has been waging an uneven war, another was added quite recently, viz: the importation of cattle ready fattened for slaughter, instead of the time-honoured practice of importing store animals to be fattened in the cow-shed by the farmers, which practice besides providing meat of superior quality, and greatly benefiting the farmers, stimulated the import trade in foodstuffs for animals, favoured a more intensive local cultivation of foodstuffs, and provided a constant supply of cow-shed manure of the best quality for keeping up the fertility of the soil. It is expected that before long adequate steps will be taken to checkmate this new danger to our agriculture.

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Appendix A.

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	Locality	Nature of the crop and number of acres of land in each crop.													
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Valletta Dist.	Valletta	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Floriana	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Hamrun & Marsa ...	55	30	16	20	4	6	1	6	18	—	97	2	255	26
	Misida & Pietà ...	37	15	4	25	1	5	2	3	5	—	43	1	141	3
	Sliema	23	6	—	12	—	2	1	2	8	—	28	1	83	2
	St. Julians	61	22	8	40	2	3	2	8	6	1	68	2	223	10
Total Valletta District ...		176	73	28	97	7	16	6	19	37	1	236	6	702	41
East District	Senglea	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Cospicua	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Vittoriosa	—	3	1	4	—	—	—	2	2	—	—	—	12	3
	Zabbar & Calcara ...	136	172	146	156	99	2	3	28	174	1	374	23	1,314	49
	Zeitun	180	191	137	138	118	21	2	15	82	—	422	11	1,317	20
	Marsascirocco... ...	79	88	24	108	84	57	—	15	40	1	234	14	744	24
	Tarxien & Paula ...	140	128	49	105	82	30	3	33	50	1	250	3	874	12
	Luca	136	158	42	96	88	32	4	39	52	—	245	4	896	24
	Micabiba	105	66	2	64	13	6	2	65	2	—	112	8	445	18
	Krendi	170	85	5	88	25	17	2	44	3	1	182	20	642	90
	Zurrico & Safi ...	520	430	13	182	40	23	5	54	5		396	32	1,700	69
	Gudia & Chircop ...	165	163	34	115	95	24	2	32	45	1	504	18	998	42
	Birzebbugia	187	208	64	215	112	52	1	50	27	1	281	46	1,244	80
	Axiak	85	86	15	78	55	24	1	15	32	1	208	10	610	48
Total East District ...		1,903	1,778	532	1,349	811	288	25	392	514	7	3,008	189	10,796	479
Central District	Naxaro Central ...	366	150	17	178	6	55	3	41	55	5	369	20	1,265	400
	Birchircara and Sta. Venera	255	84	45	492	30	21	7	45	220	4	353	13	1,569	54
	Gargur...	198	73	12	106	5	32	1	34	8	3	214	22	708	240
	Musta	115	33	7	85	3	21	10	28	3	3	128	19	455	75
	Lia & Balzan... ...	76	28	9	94	3	13	29	20	38	1	140	—	451	5
	Attard	205	95	12	106	28	18	17	20	75	1	292	2	871	24
	Zebbug...	260	103	81	116	92	83	12	47	73	1	484	6	1,358	21
	Curmi	280	184	43	90	24	23	10	50	188	—	341	14	1,247	18
Total Central District ...		1,755	750	226	1,267	191	266	89	285	660	18	2,321	96	7,924	837
West District	Notabile	405	40	42	26	23	18	1	71	147	—	313	10	1,096	6
	Rabato...	831	117	122	150	107	26	6	309	395	—	837	20	2,920	343
	Dingli	209	76	33	38	49	8	2	89	130	—	218	23	875	210
	Siggieui	478	105	143	144	125	152	39	98	248	2	552	66	2,152	292
	Imgiar	710	253	42	230	31	108	1	185	75	1	484	98	2,218	172
	Melleha	656	60	126	122	12	—	2	123	406	—	682	43	2,232	216
	St. Paul's Bay ...	595	55	78	215	13	9	2	86	225	—	564	28	1,870	115
	Naxaro, West... ...	160	72	7	60	2	23	1	37	5	—	129	16	506	347
Total West District ...		4,044	778	593	985	362	344	54	998	1,631	3	3,779	298	13,869	1,701
Total Malta		7,878	3,379	1,379	3,698	1,371	914	174	1,694	2,842	29	9,344	589	33,291	3,058
Gozo	Victoria (Gran Fontana)	121	208	38	21	1	11	1	125	36	3	309	6	880	24
	Kercem	214	235	45	12	—	2	1	73	8	3	298	18	909	37
	S. Lorenzo	180	102	30	7	—	—	—	24	4	5	191	11	554	27
	Garbo & Ghasri ...	230	260	65	37	1	3	—	48	22	16	282	16	980	106
	Zebbug...	182	378	92	9	1	2	2	104	7	4	547	12	1,340	25
	Xaghra...	140	262	71	22	1	1	5	161	30	—	290	32	1,015	38
	Nadur	105	214	76	8	1	—	4	341	31	—	207	45	1,032	56
	Kala	88	160	60	14	2	15	—	184	22	—	217	8	770	30
	Ghainsielem & Comino	150	230	52	20	5	9	1	70	18	1	351	40	947	76
	Xeuchia	95	60	21	17	6	20	—	32	1	1	98	45	396	80
	Sannat & Munxiar ...	234	145	56	10	5	118	—	36	24	4	214	98	944	94
Total, Gozo...		1,739	2,254	606	177	23	181	14	1,198	203	37	3,004	331	9,767	593
Grand total		9,617	5,633	1,985	3,875	1,394	1095	188	2,892	3,045	66	12,348	920	43,058	3,651

Appendix B.

Estimates of Agricultural Produce—1932-33.

	Locality	Nature of produce and quantity of each										
		Wheat Quarters	Barley Quarters	Beans Quarters	Potatoes Tons	Onions Tons	Cumin-seed Cwts	Citrus fruits Dozens	Other fruits Cwts.	Vegetables Cwts.	Cotton Lint Lbs.	Forages Soma or load of 10 bundles
Valletta Dist.	Valletta	—	—	—	—	—	—	—	—	—	—	
	Floriana	—	—	—	—	—	—	—	—	—	—	
	Hamrun & Marsa	225	180	61	60	27	27	800	435	1,290	—	3,840
	Misida & Pietà	150	85	15	72	7	23	1,560	215	365	—	1,715
	Sliema	94	34	—	35	—	9	750	144	580	—	1,080
	St. Julians'	245	122	30	100	13	13	1,500	580	430	235	2,480
Total Valletta District		714	421	106	267	47	72	4,610	1,374	2,665	235	9,115
East District	Senglea	—	—	—	—	—	—	—	—	—	—	—
	Cospicua	—	—	—	—	—	—	—	—	—	—	—
	Vittoriosa	—	16	3	12	—	—	—	140	144	—	—
	Zabbar & Calcara	525	950	548	420	650	9	2,300	1,980	12,400	230	14,940
	Zeitun	700	1,050	510	364	800	95	1,500	1,070	5,900	—	17,500
	Marsascirocco	300	492	90	300	558	258	—	1,120	2,880	240	9,980
	Tarxien & Paola	570	710	182	290	570	140	2,400	2,430	3,600	245	10,410
	Luca	545	870	156	265	610	150	3,200	2,930	3,750	—	9,720
	Micabiba	415	370	7	175	90	28	1,550	4,640	150	—	3,830
	Kiendi	660	460	18	250	170	77	1,520	3,110	220	235	6,570
	Zurrico & Safi	2,030	2,380	49	500	270	108	4,000	3,900	360	—	13,900
	Gudia & Chircop	650	900	128	225	656	110	1,530	2,360	3,240	240	12,000
	Birzebbugia	730	1,150	236	550	770	240	700	3,780	1,950	245	10,540
	Asciak	340	475	57	225	360	112	750	1,080	2,300	235	8,550
Total East District		7,465	9,823	1,984	3,616	5,504	1,327	19,450	28,540	36,894	1,670	117,940
Central District	Naxaro Central	1,450	825	65	508	40	250	2,300	3,010	3,960	1,200	13,370
	Birchircara and Sta. Venera	1,030	462	172	1,420	200	98	5,600	3,320	15,850	930	13,390
	Gargur	760	400	45	285	35	140	750	2,370	570	680	7,310
	Musta	450	180	25	255	20	95	8,000	2,120	220	700	4,400
	Lia & Balzan	320	156	34	265	20	60	23,500	1,475	2,800	240	4,870
	Attard	825	520	47	306	190	82	13,800	1,510	5,400	240	9,250
	Zebbug	1,045	570	310	315	635	380	9,600	3,510	5,300	245	17,340
	Curmi	1,138	1,000	170	325	165	108	8,100	3,620	13,600	—	12,030
Total Central District		7,018	4,113	868	3,579	1,305	1,213	71,650	20,935	47,700	4,235	81,960
West District	Notabile	1,625	225	178	85	160	84	750	5,710	10,600	—	11,350
	Rabato	3,380	540	456	450	735	125	4,800	24,950	28,500	—	32,410
	Dingli	800	400	120	130	320	35	1,500	6,920	9,380	—	9,110
	Siggieui	1,940	580	545	420	834	700	30,000	7,840	18,000	480	19,020
	Imgiar	2,720	1,330	825	610	205	470	700	14,800	5,400	230	16,030
	Melleha	2,570	320	450	400	80	—	1,500	9,450	29,500	—	26,570
	St. Paul's Bay	2,400	310	840	620	92	42	1,550	6,870	16,400	—	20,620
	Naxaro, West	640	400	230	180	13	110	750	2,750	370	—	4,580
Total West District		16,075	4,105	3,644	2,895	2,439	1,566	41,550	79,290	118,150	710	139,690
Total Malta		31,272	18,462	6,602	10,357	9,295	4,178	137,260	130,139	205,409	6,850	348,705
Gozo	Victoria (Gran Fontana)	490	1,042	142	58	7	50	760	9,940	2,700	750	11,030
	Kercem	830	1,160	170	30	—	9	700	5,420	610	700	10,620
	S. Lorenzo	680	500	110	16	—	—	—	1,770	280	1,200	6,770
	Garbo & Ghasri	920	1,320	245	100	6	15	—	3,660	1,700	4,120	10,300
	Zebbug	735	1,913	346	24	7	10	1,520	8,110	550	1,150	19,660
	Xaghra	560	1,312	264	62	6	4	4,000	12,540	2,360	—	10,380
	Nadur	420	1,080	270	20	6	—	3,100	27,140	2,400	—	7,450
	Kala	330	788	225	40	13	68	—	14,230	1,680	—	7,975
	Ghainsielem & Comino	550	1,130	210	50	30	40	750	5,300	1,420	240	12,850
	Xeuchia	375	303	82	42	40	92	—	2,450	80	255	3,530
	Sannat & Munxiar	920	725	202	23	32	525	—	2,650	1,930	1,060	8,000
Total, Gozo		6,810	11,273	2,266	465	147	813	10,830	93,210	15,710	9,475	108,565
Grand total		38,082	29,735	8,868	10,822	9,442	4,991	148,090	223,349	221,119	16,325	457,270

Appendix C.

Prices of Agricultural Produce during 1932-33.

	£ s. d.		£ s. d.	
Wheat	1 16 8	to	2 1 10	per quarter.
Barley	0 16 8	„	0 18 4	do.
"Mischiato"	1 1 8	„	1 5 0	do.
Beans	1 10 0	„	1 13 4	do.
Peas	3 0 0	„	— — —	do.
Common Vetch	1 10 0	„	1 13 4	do.
Chickling Vetch	1 13 4	„	1 16 8	do.
Bitter Vetch	1 10 0	„	1 13 4	do.
Spring and Summer Potatoes ...	6 8 9	„	10 3 4	per ton.
Winter Potatoes	1 12 0	„	3 10 6	do.
Onions	0 6 6	„	1 12 0	do.
Cumin	1 6 8	„	1 8 9	per cwt.
Citrus fruits	0 0 3	„	0 0 6	per dozen
Grapes	0 6 6	„	0 9 7	per cwt.
Figs (fresh)	0 3 6	„	0 6 0	do.
Prickly pears	0 3 0	„	0 5 6	do.
Other fruits	0 7 6	„	0 9 6	do.
Vegetables	0 4 6	„	0 10 0	do.
Cotton	0 0 4	„	— — —	per lb.
Forages	0 4 0	„	0 4 9	per load of 10 bundles.
Wheat-straw	0 3 6	„	0 4 0	per net.
Barley-straw	0 1 0	„	0 1 1	per load of 10 bundles.
Firewood, thick	0 7 0	„	0 9 0	per pesata of 300 rotoli.
Firewood, in bundles	0 2 6	„	0 3 6	per load of 10 bundles.
Goat's milk	0 1 8	„	0 2 0	per gallon.
Cow's milk	0 3 3	„	— — —	do.
Wine (common)	0 1 8	„	0 2 1½	do.
Cheese	0 1 1½	„	0 2 1	per lb.
Cheese, fresh	0 0 5	„	0 0 6	do.
Wool	0 1 9	„	— — —	do.
Beef	0 0 11	„	0 1 1½	do.
Pork	0 0 10	„	0 1 0½	do.
Mutton	0 0 9½	„	0 0 10½	do.
Lamb	0 0 9½	„	0 0 10½	do.
Eggs	0 0 7	„	0 2 3	per dozen.
Poultry	0 2 0	„	0 6 0	per head
Rabbits	0 1 6	„	0 2 6	do.

Appendix D.

Estimated value of Agricultural Produce grown in these Islands during 1932-33.

			£ s. d.		£ s. d.
Wheat	38,083 qrs.	at	2 0 0	=	76,164 0 0
Meslin or "Mischiato"	10,738 „	„	1 3 4	=	12,527 13 4
Barley	18,997 „	„	0 18 4	=	17,413 18 4
Straw (Wheat and Meslin)	300,000 "nets"	„	0 3 8	=	55,000 0 0
Straw (Barley)	142,000 "some"	„	0 1 0	=	7,100 0 0
Beans	8,868 qrs.	„	1 11 8	=	14,041 0 0
Potatoes (Winter)	9,333 tons	„	2 17 6	=	26,832 7 6
Potatoes (Spring and Summer) ...	10,822 „	„	9 0 0	=	97,398 0 0
Onions	9,442 „	„	0 10 0	=	4,721 0 0
Cumin	4,991 cwts.	„	1 8 0	=	6,987 8 0
Citrus fruits	148,090 dozen	„	0 0 4	=	2,468 3 4
Grapes	151,550 cwts.	„	0 8 6	=	64,408 15 0
Other fruits	71,799 „	„	0 8 6	=	30,514 11 6
Cotton (lint)	16,325 lbs.	„	0 0 4	=	272 1 8
Cotton seed	290 cwts.	„	0 7 0	=	101 10 0
Vegetables	221,119 „	„	0 6 6	=	71,863 13 6
Forages...	457,270 "some"	„	0 4 6	=	102,885 15 0
Maize	566 qrs.	„	2 0 0	=	1,132 0 0
Melons and Water melons	32,156 cwts.	„	0 8 3	=	13,264 7 0
Prunings	34,100 "some"	„	0 2 9	=	4,688 15 0
		Total ...	...		£609,784 19 2

APPENDIX E.

The Police returns of livestock on the 31st. December, 1932, as compared with the returns on the 31st. December, 1931, are given in the subjoined table :—

Livestock	31st. December, 1932			31st. December, 1931		
	Malta	Gozo	Total	Malta	Gozo	Total
Cattle:—						
Maltese breed ...	2,143	324	2,467	1,897	571	2,468
Foreign breeds ...	899	763	1,662	953	574	1,527
Ovines:—						
Goats	21,437	7,419	28,856	19,679	7,636	27,315
Sheep	11,373	8,635	20,008	11,219	8,037	19,256
Pigs	3,619	717	4,336	3,897	1,354	5,251
Donkeys:—						
Maltese breed ...	115	40	155	112	36	148
Foreign breeds ...	2,866	1,208	4,074	2,664	1,372	4,036
Horses	2,857	357	3,214	2,468	347	2,815
Mules	2,491	553	3,044	2,353	546	2,809

APPENDIX F.

OFFICE OF AGRICULTURE,
Valletta, 14th July, 1933.

Sir,

I have the honour to submit the following report on the work done in Plant Pathology during the year 1932-33.

I. IMPORTS SUBJECT TO PHYTOPATHOLOGICAL RESTRICTIONS.

2. There were 784 consignments of agricultural produce which were submitted to phytopathological examination during the year. These included Citrus fruit, potatoes, onions, garlic and a few parcels of fruit-trees, oranmental shrubs, flowering plants and bulbs, peat and leaf mould.

3. Citrus fruits were imported mostly from Sicily and Calabria, but there were parcels from Jaffa, Jamaica and Spain. These included :—

Oranges estimated	514,154	dozens.
Lemons estimated	171,163	,,
Mandarin oranges estimated ...	11,233	,, and
Grape fruit estimated	717	,,

4. Potatoes were imported from the United Kingdom, Italy, Belgium, Holland and Germany.

5. The potatoes imported from the United Kingdom were used entirely for seed purposes and included :—

Northern Invincible	4,386	bags of 2	cwts. each.
Champion	26,785	,, 2	,, ,,
Up-to-date	4,511	,, 2	,, ,,
and	160	,, 1	cwt. each.
Sharpe's Express	1,000	,, 1	,, ,,
Other varieties	460	,, 1	,, ,,

6. The latter included Arran Banner, Queen Mary, Majestic, Tinwald Perfection, Kerr's Pink, King Edward, Arran Chief and Great Scott.

7. In addition to the above there were also 2143 small bags of about 1cwt. each of seed potatoes from Holland, and 40 bags of the same size from Germany. The Dutch varieties imported were Engenheimer, Wilde Duc and Tom Triumph, and the German variety was Erd Gold.

8. The potatoes imported from the United Kingdom this year were badly affected with blight and dry and wet-rot. The consignment of Sharpe's Express from Scotland contained, besides, many tubers having small sclerotia of *Rhizoctonia solani*, as well as tubers affected with the diseases known as bunt-werden and strain-disease; so that the prospects of this year's spring and summer crop were uncertain from the very start.

The Superintendent of Agriculture.

9. The potatoes imported for food-purposes during the year, included :—

1,366,316 Kgs. from the Netherlands,
1,194,231 ,, ,, Italy and
5,000 ,, ,, Germany.

10. Onions and garlic were imported from Sicily and Egypt; fruit-trees, ornamental shrubs, flowering plants and bulbs, peat and leaf mould were imported from Italy, England, Holland, Egypt and Greece.

11. Several parcels of ornamental plants and bulbs coming from countries widely infected with the San Jose' Scale and the Colorado Potato beetle were seized and destroyed, and three consignments of oranges from Jaffa infected with *Chrysomphalus aonidum*, the Red Scale of California were not allowed to land but shipped back to the port of origin.

II. EXPORTS FOR WHICH PHYTOPATHOLOGICAL CERTIFICATES HAVE BEEN ISSUED BY THIS DEPARTMENT.

12. There were 345 consignments of agricultural produce for exportation for which phytopathological certificates have been issued by this Department during the year. These included potatoes for Great Britain, Germany, Switzerland, Tunisia, Ceylon, Belgium, Holland, France and Tripolitania; cumin seed for the U.S. of N. America and the Republic of Venezuela; onions and garlic for Tunisia and Tripolitania and parcels of live plants for England, Tunisia, Egypt and France.

III. DEPARTMENTAL ACTIVITIES IN THE FIELD.

(1) The Bark Beetle (*Scolytus rugulosus*).

13. The Bark Beetle was imported over twenty years ago by the Jesuit Fathers of Birchircara and disseminated from their gardens throughout both Malta and Gozo. The earliest outbreaks were noticed at Balzan, Lia and Attard, but in these places the pest is now well under control, as it has been found that it succumbs readily to repeated treatments with Suphide of Potassium, and trees which are not too badly damaged from the attacks of the beetle, generally recover. This year severe outbreaks of the pest were experienced at Dingli in Malta and at Nadur in Gozo. The latter was particularly virulent as most stone-fruit trees were found infested. Treatment with Potassium sulphide was applied to 8557 trees by the staff of this Department. It is feared, however, that the infection has spread more than could be ascertained so far.

(2) The Mole Cricket (*Gryllotalpa vulgaris*).

14. The Mole Cricket is causing considerable damage at Melleha, Puales, Ghain Tuffieha, Kasam Barrani, Curmi, Krendi and Birzebbugia in Malta, and Ramla, Ghain Sielem, Gnien Imrik and Xlendi in Gozo. The crops most severely hit are root crops, especially potatoes, but kohl-rabi cauliflowers and cabbages are also badly damaged when still young. At Ramla, in Gozo, the pest has proved very destructive to rootlings of American vines.

15. Several demonstrations were made to farmers for the control of this pest with various chemicals. Among these, the preparation called "Vaporite" has been found both safe and easy to handle, while it gave results which compare very well with those obtained by the use of other chemicals, more dangerous to apply.

(3) The European Fruit Fly (*Ceratitis capitata*).

16. The Fruit Fly proved very troublesome this year. Several fresh experiments were made to check its ravages, but so far none gave definite results. The collection and destruction of windfalls and treatment with injections of carbon bisulphide into the soil, to kill the pupae, were carried out in the larger groves of the Island as has been done in the preceding years. About 80% of the crop could thus be saved in the orange groves treated, but fresh hordes of the insect kept pouring into these gardens during the whole season from neglected places in the vicinity.

17. Unless some very effective direct treatment is found for this pest there is little chance of its numebers being ever reduced during the summer months. The numerous plots planted out with the prickly pear in both Malta and Gozo afford excellent places for the fly to breed unmolested at the very moment when its increase in numbers is most injurious to all our fruit cultivations and particularly to Citrus fruits, peaches and pears. Many of these prickly pear plantations are old and the fruit which they produce, for which the fly appears to have a special attraction, is full of seeds and unfit to eat. Consequently it is left ungathered, and very often the

rotten fruit, teeming with the larvae of the fly, can be seen thickly strewn on the ground. I believe that special legislation should be passed to place the planting and keeping of the prickly pear plantations under the control of this Department.

(4) The Woolly Aphis (*Eriosma lanigera*).

18. The apple orchards at Mtahleb, which have been so successfully treated with Potassium permanganate washes and injections of Carbon bisulphide into the soil for the Woolly aphis, are now in a very florid condition; and the growers encouraged by the good results obtained and especially by the heavy crops of well-shaped fruit, have more than doubled the plantations which existed four years ago, when we applied the treatment for the first time. This year the treatment was applied to 11,078 apple trees, to check fresh outbreaks of the pest, mostly due to the introduction of diseased stock for planting during the preceding winter. These rootlings, it was ascertained, were brought from orchards and gardens at Rabato and Dingli, and the diseased trees and stock for planting in these places were also treated in the same manner.

(5) The Armoured Scale-Insects.

19. Many of the Armoured Scale-Insects which are commonly met with in our gardens, such as *Mytilaspis citricola*, *Parlatoria Lucasi*, *Aspidiotus hederae* and *Diaspis pentagona*, are now comparatively easily held in check by spraying with permanganate of potash solutions; but *Chrysomphalus dictyospermi* has still resisted successfully all attempts of effective control. The preparations hitherto used as sprays for this pest are petroleum emulsions, the sulphur lime lotion, resin-washes, Volckt. Potassium permanganate, milk of lime and Potassium sulpho-carbonate. The latter prepared according to a formula deviced by this Department gave the best results, but in no case could the pest be completely checked by its means. Gassing with Hydrocyanic Acid Gas has never been tried and its application on a large scale is not advisable, owing to the thickly inhabited surroundings of our groves and gardens.

20. Following the policy adopted by this Department 2,707 Citrus trees in Gozo and 7,610 Citrus and other trees in Malta, infested by this scale, were sprayed twice during the summer months.

(6) The Ladybird Novius Cardinalis.

21. During the unusually windy months of last winter, it was feared that the colonies of the ladybird *Novius cardinalis* in the open would not survive the severity of the weather, and that all the trouble taken during the last years to naturalize it would be lost. Such, however, was not the case, because with the first days of spring the useful insect was again observed in several groves and orchards.

(7) Phylloxera of the Vine.

22. *Phylloxera vastitrix* has been detected in the vineyards of Ghar Lapsi, the last vineyards in Malta which were not yet known to be infested by the pest. Probably these vineyards were infected a year earlier, during the summer of 1931. This places the total number of years taken by the pest to spread from its two original 'foci' of infection at Caccia in Gozo and Ghain Znuber in Malta, at about 14 years, as it is commonly believed that the insect was introduced more than three years before its detection at Ramla in Gozo in 1920, during which time nothing was done to stay its dissemination. The spread of the insect in these Islands should therefore be considered as having been comparatively slow when compared with other countries such as Italy, where the pest invaded 351,316 hectares of vineyards, involving 41 out of the 69 provinces of the Kingdom, in less than 20 years.

(8) Tree Canker.

23. Many of the old Citrus trees at Boschetto are badly affected with canker. The disease generally begins from a wound whch does not heal properly and spreads downwards, destroying the heartwood and producing unsightly cavities. Some of these trees should be renewed, because they are too far injured to be of any use, but there are many which are still sufficiently productive to deserve a tentative treatment by which they may benefit.

24. Following the method which has lately been applied to some historic elms in Virginia, U.S.A., to preserve them from further decay, I have this year treated 91 Citrus trees as an experiment. This treatment consists in scooping out the dead tissues and disinfecting the wounds thoroughly twice, with an interval of eight days. After the second disinfection the cavity is filled with a mixture of cement and fine sand, and branches which require support are strengthened with iron bars about half an inch in diameter, running throughout their length and embedded in the cement.

25. The results obtained are very satisfactory so far, and the trial, which is inexpensive, will be extended to the other similiarly affected Citrus trees.

(9) The Tree root-rot. (*Armillaria mellea*).

26. There were several reports of outbreaks of the Tree root-rot during the year. The most important of these came from Giardin Grande of Casal Dingli where 72 orange trees were affected. On examination it was found that the disease was not far advanced and the trees occupied a rather isolated position in the garden. There is no recognized remedy for this disease, except the removal and burning of the affected trees to check its spread to other plants in the same place, but availing myself of the circumstances, I treated these trees by way of experiment. As a preliminary precaution, a trench 3 feet deep was dug to separate the diseased trees from the rest of the plantations. This trench was then refilled with the soil thoroughly mixed with a liberal quantity of sulphate of iron in crysals. The larger roots of the affected trees were afterwards cleared of the soil as far down as possible, the diseased portions cut off and removed for burning, and the rest painted with a solution of sulphate of iron. A thin layer of the salt was also spread on the bottom of the pit and a fair quantity mixed with the soil before replacing in position. A final top dressing with the chemical was given to the entire plot as far as the trench. The treatment proved a success. Out of the 72 trees treated only three died and the rest recovered.

27. Another report came from Zebbug where 9 orange trees were affected in like manner. The same treatment was applied to these trees, all of which have fully recovered.

28. More difficult to deal with was a casé from Pietà in a garden tenanted by flower dealers, where 2 fig-trees and a number of stone-fruit trees and roses were affected. The fig-trees were treated sucessfully, but the fruit trees, which were of three or four years growth, and the roses had to be removed. It appears that the soil in this place, which occupies a low site, is badly infected by the fungus.

(10) The Potato Blight. (*Phytophthora infestans*).

29. A mild attack of blight appeared on the early crop of winter potatoes, but weather conditions were unfavourable for its development, and consequently, the whole crop nearly reached maturity practically free from disease. The plants were throughout the whole season very fine, and production, was also heavy. However, during the last weeks, between the 20th and the 27th November a spell of very wet weather re-started the disease with an extraordinary virulence. In the fields which had not been sprayed with Bordeaux Mixture nothing was left but the blackened haulms, deprived of their foliage, sticking out of the ground. This wet weather was followed by a three weeks truce of dry breezes and a clear sky, which allowed ample time to the growers to lift the whole of their crop before more rain could carry the infection to the tubers.

30. The disease re-appeared in March, in a mild form, on the spring crop, which had already sustained numerous failures of the sets from the diseased condition of the tubers imported for seed-purposes. Matters were made worse by heavy, prolonged gales and by the early cessation of all rain. Consequently the plants made little progress on unirrigated lands, and production was very low. On irrigated lands the crop came nearer to normal conditions.

31. In order to help the farmers, and especially the more needy ones, 1449 tummoli of land under cultivation with the winter crop of potatoes and 1080 tummoli under cultivation with the summer crop were sprayed under the supervision of this Department, partly free of charge.

(11) The Downy Mildew and the Powdery Mildew of the vine.

32. *Plasmopara viticola*, the Downy Mildew of the Vine, and *Oidium Tuckeri*, the Powdery Mildew, were not much in evidence last summer. Moreover very few vineyards were left unsprayed by the growers. In August a heavy unusual downpour of rain caused some damage to the crop of grapes, especially in Gozo.

IV. TECHNICAL INSTRUCTION TO FARMERS AND GROWERS.

33. During the year technical instruction on the treatment of plants for diseases and pests was given to 3198 farmers and growers at their own farms or residence. These included.—

310 on the control of the Fig-Scale,
473 on the treatment of vines for cryptogamic and other diseases,
1577 on the treatment of the potato crops for blight and bacterial diseases,
79 on the control of the Woolly Aphis,
64 on the treatment of stone-fruit trees for the Bark Beetle and other pests,
419 on the control of scale-insects,
276 on the control of aphides, the bud worm of the cabbage tribe, various caterpillars, the mole cricket, slugs and other enemies of the kitchen garden.

V. ISSUE OF CERTIFICATES AND INSPECTION WORK.

34. The number of certificates issued by this Department during the year included :—

488 certificates of release for agricultural produce imported into these Islands, and
345 certificates for agricultural produce exported from these Islands.

35. In connection with the issue of these certificates and the Departmental activities 982 inspections were made by me and by the Inspector for Plant Diseases at the Marsa, in the Customs Warehouses, in private stores and in farms and private gardens in both Malta and Gozo.

36. Owing to the fraudulent sale of sulphate of copper of inferior quality to farmers, for the spraying of plants, the sale of this chemical for agricultural purposes was placed under the control of this Department by Government Notice No. 81 of the 18th March 1932. Retailers are now required to have a licence to sell sulphate of copper and are subject to have samples of the stock kept taken and examined at any time. The suplhate of copper retailed should also be 98/99% pure. In connection with this measure 49 licences were issued during the year.

I have the honour to be,

Sir,

Your obedient servant,

P. Borg,

Plant Pathologist.

Appendix G.

Office of Agriculture—Malta.

Valletta, 14th July, 1933.

Sir,

I have the honour to submit the annual report on the working of the Experimental Farm.

2. The activities of the Farm, in view of its impending organization in relation to buildings for the breeding of farm animals and poultry farming have been limited to experiments of field crops, chiefly on potatoes. This crop is of considerable importance to our farmers, since it represents practically the only source of revenue to this class of the population and I deem it worth while to devote a good part of research work at the Farm to this crop.

Field Crops.

3. The climatic conditions were very unfavourable to the spring crop of potatoes. During the whole month of January rain fell almost daily and no field work has been possible Artificial manure could not be spread in time, and being given later on could not give the desired results. The intermittent drought which started at the end of February and persisted up to the end of the season, coupled with the strong winds in the second fortnight of April, contributed to damage this crop.

4. The following experiments have been carried out on spring potatoes :—

a) A number of varieties, eleven in all, were imported in October last. The area of each plot, the weight of the seed sown, the description as to shape and flesh, the production in rotoli of each plot as well as the production per tumulo and the priority in sprouting of each variety, are shown in the table below. Although resistance to climatic conditions cannot be determined by a single experiment, since many factors come into play, another column has been added to show the relative resistance of these varieties.

Variety	Area of plot in sq. feet	Weight of seed in rotoli	Description of variety	Production of each plot in rotoli	Production in cantars per tumulo	Date of sprouting	Relative resistance to adverse weather conditions
Tinwald Perfection	2914	56	* Y. K.	305	13·35	March 5	Resistant
Sharpe's Express...	2860	50	Y. K.	56	2·36	„ 1	Not observed
Snowdrop	3020	55	W. K.	134	5·37	„ 7	Resistant
Sterling Castle ...	2650	56	W. K.	187	8·54	„ 9	Fairly resistant
Duke of York ...	2563	52	Y. K.	158	7·44	„ 9	Do.
Arran Crest	2756	48	W. K.	81	3·59	„ 11	Do.
May Queen	2444	49	Y. K.	21	1·04	„ 13	Resistant
Dunnotler Castle...	2288	52	W. K.	145	7·66	„ 9	Do.
Ben Lomond... ...	2340	56	W. K.	299	15·46	„ 9	Very resistant
Eclipse	2226	54	W. K.	151	9·46	„ 6	Fairly resistant
Abundance	1932	53	W. O.	314	19·46	„ 6	Resistant

* Note — Y. means yellow flesh. K. means kidney shape.
W. means white flesh. O. means oval shape.

These varieties were sown on the 7th February. The ones which yielded poor crop should not be judged by the results obtained, as these experiments cannot be considered conclusive The seed was imported in October last, the tubers developed sheots from 4 to 6 inches long, whereby the tubers themselves were weakened. No expiriment on spring potatoes is complete unless the seed is tested for the winter crop; in some instances, varieties which do well for the spring crop, give poor results when the seed is sown for the winter crop. Accordingly the seeds most promising will be tested again next winter.

The Superintendent of Agriculture, Valletta.

b) Another experiment was conducted with the Queen Mary variety to ascertain the effects on production of varying doses of artificial manure sulphate of ammonia. This fertilizer is most adapted to our soils; being physiologically acid it contributes to correct to a certain extent the alkalinity of our soils and approach the neutrality in soils, so essential to plant life. The nitrate of soda, being physiologically alkaline by increasing the alkali in our soils, renders the cultivation of crops more difficult. The use of nitrate of soda should be limited to instances, where a growing crop has been severely damaged, in which case the fertilizer will help the plants to grow new leaves, as its effects are immediate.

5. Each series comprised two plots similarly treated and one of them was designed to be irrigated. This plan subsequently had to be abandoned to save the crop, as the persistent drought would have ruined it. For the reasons stated above, and as artificial manure could not be transferred in time, to an assimilable form to enable it to be utilized by the potato crop, the results were quite different from what was expected. These same plots will be again sown with winter potatoes, and I am confident that the effects of the different treatment will be demonstrated in the winter production.

c) A third experiment was conducted with house refuse manure prepared by the Boggiano-Pico system. The object of this experiment has been the testing of the efficiency of such manure. The Superintendent of Public Health, passed to this Department two bags of this manure supplied free by the firm Marco Macelli & Co. of Messina. The plots were sown with potatoes of Borger variety, the results being tabled below :—

Plot.	Manure per tumolo.	Production in Cantars per tumolo.
A.	Local organic manure in usual quantities and 45½ rot. of sulphate of ammonia	9·11 Cantars.
B.	Sulphate of ammonia in same quantities and 152 rot. of house refuse	9·91 Cantars.
C.	House refuse only	9·10 Cantars.

These plots could not be irrigated; they suffered from the drought, which accounts for poor production. Although conclusion cannot be drawn from a single experiment, still the results obtained are favourable to the use of similar manure prepared locally, either by the above mentioned system which is expensive, or else by the system devised by Beccari Voltancoli which is more simple in its working and also cheaper.

d) A small plot was sown with potatoes of the Royal Kidney variety,—of which the Queen Mary is a strain,—kindly supplied by Messrs. Calascione & Sons. The sample was imported months before the tubers could be sown and in the interval they sprouted long shoots, which was conducive to weakness. The production per tumolo was rather small, being 6.42 cantars per tumolo, although the plot was manured with sulphate of ammonia and with local farmyard manure.

e) Another experiment was conducted to investigate the difference in production on irrigated and unirrigated plots. A sample of potatoes of Borger variety, kindly supplied by Messrs. Tabona & Sons was treated the same, as plot in experiment (d) and was also irrigated. Another plot sown with the variety Queen Mary was similarly treated. The result is as follows :—

Variety of potatoes.	Poduction in cantars per tumolo. Not irrigated	Irrigated.
Borger	9.11	11.68
Queen Mary	7.76	11.32

The figures relating to the Queen Mary variety are much more significant as the plots were equal in all respects, being contiguous and having similar aspect; while the case of the Borger was quite different, as the sample was received rather late and could not be sown under the same conditions and in the same locality where the former Borger had been planted. Further investigation on the effects of irrigation on production will be carried out in future. In the instance of the Queen Mary variety the production in the two plots differed by 46%. It is to be noted that the water for irrigation was slightly brackish.

6. A series of experiments is being conducted on the cultivation of the soya for seeds. This legume has been known a long time for its feeding value, superior to any other cultivated legume. I regard its cultivation most suitable to these Islands. A trial is being made to determine to what distances the seed is best sown. Another experiment is being conducted having the plots treated differently, viz : with artificial and organic manure in different doses ; with organic manure only ; with artificial manure only, and of course, control plots were added. In one experiment the seed was sown on the 9th April, while for the second experiment a week later. In both instances we had recourse to irrigation, but it is hoped that next year, by sowing much earlier, we shall grow this legume without the aid of irrigation. The crop is doing well, the plants are vigorous but some are chlorotic. I have reason to hope that the next crop will grow much better, as by then the soil will become inoculated with the specific variety fo the Bacterium radicicola peculiar to the soya. On uprooting some plants, I noticed that while at this stage, they should have the characteristic nodules at their roots, such nodules were hardly traceable.

Horticulture.

7. This section of the Farm cannot be utilized to its full extent as vegetables are more susceptible to brackish water. However, besides the testing of new varieties of vegetables and growing of artichokes, aubergines, brussels sprouts and tomatoes for later crop, are being conducted.

8. The brussels sprouts should be extensively grown by our farmers ; on account of the excellence of this vegetable and for the great demand for it by English residents, this crop should command good prices and prove very profitable to the farmer. The first thing to determine, was to investigate whether this crop can be available all the whole year round and if not, in what seasons it could be grown. With this in view, seeds were sown in October and January and planted out in January and March respectively.

9. The seed sown in October, though it throve well, and the plants are well grown did not bear fruit, and proved that sowing in October is useless. The plants from seed sown in January are doing well but the results cannot be specified as the plants have not borne fruit yet. Another trial will be conducted on the 15th of July ; previous experience seems to justify this date for sowing to have a crop from January onwards.

10. As soon as protective tariffs will be definitely approved, and as fresh tomatoes constitute one of the items protected, it will be necessary to grow early and late crops to supply the local market. With this in view, seven varieties of round tomatoes, more or less seedless, for table use, are being tested at the Farm, as a late crop. The plants will be grown on a single stem, supported by canes, in this way it is expected to have a good crop both as regards quantity and quality.

Animal Breeding.

11. Provision has been made in the Estimates for breeding of farm animals, which in future will be bred at the Farm. Provisionally we are breeding a Berkshire sow and three young boars, bought from Mr. Jacono. These Berkshire pigs are descendants of prize winners at the several county shows in England as shown by the pedigree chart which Mr. Jacono exhibited. The sow had been served already when bought, and on the 7th May farrowed a litter of five, one of which was still born. This litter is not quite satisfactory, as such a sow for a first farrow, should have at least a litter of seven. The cause of the one born dead, I ascribe to too much inbreeding, the other four piglings (two males and two females) are thriving well, but some shall have to be discarded on account of misplaced white patches on the skin. In order to maintain a breed in its purity it will be necessary to practice continuous selection and to discard all subjects which morphologically or otherwise differ from the pure breeds. The boars, as soon as they shall be nine months old, will be utilized for crossing with the sows of our farmers. As soon as the piggery will be built experiments will be conducted on this subject to watch to what extent, if any, the Maltese breed benefits from such crosses. The best methods of fattening pigs will be investigated at the Farm, as soon as buildings, animals and the trained personnel will be available.

12. The mule-getting breed of donkeys at present amounts to six jacks and three jennies. One of the jacks is useless for service while another young jack will have to be slaughtered on account of defects in his joints. This object is not uncommon with young donkeys; three other males had to be slaughtered for similar reasons. I ascribe this grave short-coming to the lack of exercise. In fact for such breeding, so long as the donkeys are kept confined without exercise, at the Poor House and unless an extensive area of pastures be available, no good result should be expected.

Water supply.

13. The water supply for irrigation purposes at the Experimental Farm, is derived from three sources. All of them have different degrees of salinity; before using it further, I wanted to ascertain the chloride contents. Three samples, one of each source, were accordingly sent to the Government Analyst who was good enough to examine them. Their contents in chloride is as follows :—

Sample No. 1	...	...	...	1.076 per 1000.
Sample No. 2	...	...	...	1.376 per 1000.
Sample No. 3	...	...	...	1.588 per 1000.

All the results showed that the samples are unfit for human consumption as they contain more than .8 per 1000 of chloride; for irrigation purposes may be utilized as crops generally are able to withstand a salinity of 4 per 1000, but though they resist, production will be more or less hindered according to the degree of brackishness. No matter how much attention is paid to details of cultivation, brackish water even to a small extent, will never give the same results as water that is free from this alkali. In these experiments as well as in all others which may be carried out in future, the slight brackishness of the irrigation water, should be taken into consideration in judging results.

Farm implements.

14. With the transfer of the Labour Training Centre to the Department of Agriculture, several farm implements passed to the Experimental Farm; while these may have been necessary for the purpose to which they were originally meant, viz: to train emigrants to methods of farming in Australia, some of these implements are not suitable for our methods of farming, others may be used with advantage, especially the light ones. A plan was devised to train farmers to work with a type of plough new for Malta. Accordingly with a light plough which belonged to the Training Centre and another type which belonged to the Farm, the farmers there employed would be trained to handle this plough which did work much more accurate and effective, than the local plough as it turned turtle the soil. Such important work, however, could not be effected as owners of horses refused to plough land with these new implements, which, they asserted, were too heavy for their horses. Unless provision be made for the acquisition of draught horses, I doubt whether we shall be able in future to hire horses to draw these new ploughs.

15. The Fordson Tractor which has been transferred from the Labour Training Centre, may hardly be used at the Farm. This tractor requires deep soil and level land, conditions which may be found on low land; for hilly localities, where fields are terraced and sloping, this type should not be recommended. A garden tractor, very light, not bulky, which may be easily handled, with a small H.P. may be used with advantage in our peculiar conditions, where the fields are surrounded with rubble walls and the tractor has to turn at sharp angles.

I have, etc.,

A. Azzopardi,
Director of Experimental Farms
and Agricultural Organizer.

Appendix H.

Office of Public Gardens,
San Antonio, 14th July, 1933.

Sir,

I have the honour to submit the Annual Report on the Public Gardens, Plantations and Nurseries for the year 1932-1933.

GARDENS AND PLANTATIONS.

San Antonio Public Gardens.

2. During the year, 24 Orange trees, 6 Mandarine trees, 4 Grape Fruit trees, 4 Citron trees and 12 Ornamental trees, 70 shrubs and 26 creepers were added. The number of oranges, lemons, etc., obtained from the Public Gardens was about 10,600 dozen which were sold by contract for £229. 0. 0. Other proceeds from the sale of fruits, plants, flowers and firewood amounted to £37. 10. 6, making a total of £266. 10. 6. The total proceeds last year amounted to £148. 14. 4.

3. An all-round improvement has been made in these gardens this year. The cultivation of lawns has been extended, and beds of Tulips and Iris in beautiful designs have been cultivated among the grass making a very attractive show. Long borders of Tulips on a background of Myosotis and Nemophila with an edging of Pansies and Bellis were very effective. Under the sheds at the North end of the garden, collections of Zonal, Regal and Ivy Pelargoniums, Schizanthus with large charming flowers in many splendid shades, Nemesia Sontoni, Salpiglossis and Streptosolem made a wonder display. Under the new shed at the south end of the garden, Azaleas were in full bloom from December to early Spring, followed by tree Paeonies, Hydrangeas and Giant-flowering Petunias of the Superbissima type. Among the many spring annuals, Pansies with the largest flowers and in the rarest and most effective colours were very prominent. With the assistance of a great variety of foliage and flowering plants, a constant show was to be seen in the greenhouse which is so popular with visitors. Among the subjects which attracted notice were beautiful collections of Begonia, Primulas, Cyclamens, Streptocarpus and Calceolarias. In addition to the old collection of Cacti and succulents, a splendid new collection of these interesting plants which are gaining in popularity day by day, has been formed comprising many of the finest species in cultivation.

4. The attendance of the Public was very satisfactory, especially during holiday time. The number of tourists who visited the gardens during the year as informed by the Tourist Bureau, was about 78,490.

5. Twenty-eight lectures on floriculture and arboriculture were delivered by the Superintendent to apprentice gardeners employed in the Public Gardens. Private gardeners who may wish to avail themselves of this opportunity, have also access to these lectures.

6. Information has been furnished by the Superintendent, personally or by correspondence, to persons seeking advice in horticulture or arboriculture, and parties interested in the work of the garden were conducted round by the Superintendent, and furnished with information of the many interesting plants within the area.

7. Three other new plant shelters have been constructed on the south-end side of the garden. The series of plant-shelters at this end of the garden is now complete and has been found very useful as a permanent show house for special collections of flowering plants when in full bloom, and large specimens of ornamental plants.

Boschetto Gardens.

8. The following fruit trees, vines etc. were planted during the year : 40 fruit trees, 41 new vines, 1,300 rootlings of American vines, 700 cuttings of Quince, and 96 rootlings of new stocks of quince, plums and apples. 253 American vines were also grafted.

The Superintendent of Agriculture.

9. The number of oranges, lemons etc. obtained from the gardens was about 4,300 dozen which were sold by contract for £102. 15. 10. The crop of figs and grapes was also sold by contract for £77. 13. 0, and that of loquats for £30. 15. 8. Other proceeds from the sale of fruits, firewood etc. amounted to £54. 13. 7, making a total of £265. 18. 1. The total amount collected last year was £169. 5. 0.

10. These gardens continue to be the favourite resort of holiday makers, and were visited by huge crowds of people on Sundays and holidays, and also during the days of the week.

San Antonio and Verdala Private Gardens.

11. 6 shrubs have been added during the year, and 6 orange trees, 8 fruit trees and 4 shrubs have been replaced.

Other Gardens.

12. Beautiful floral displays have been maintained throughout the year in all the Valletta and Floriana Public Gardens.

13. The following trees and shrubs were planted in the undermentioned Public Gardens during the year :—

Notabile Esplanade Gardens	10 trees	70 shrubs	—
Blata-il-Baida Gardens	40 trees	—	—
Calcara Gardens	10 trees	—	—
Lower Barracca Gardens	3 trees	6 shrubs	—
Hastings Gardens	2 trees	3 shrubs	—
Upper Barracca Gardens	—	—	4 creepers
Maglio Gardens	—	3 shrubs	—
St. Michael's Bastion Gardens... ...	—	3 shrubs	—
Senglea Point Gardens	—	6 shrubs	—
Luca Briffa Gardens	—	3 shrubs	—

14. Several Public Gardens were used on a number of occasions for holding fairs and other entertainments.

Public Plantations—Malta.

15. The number of trees and shrubs added to the plantations along roads and open spaces in Malta, during the year, was 406, and the number of dead, destroyed and damaged trees replaced during the same period was 672.

16. The following is a detailed list of the new plantations :—

Locality	No. of trees	Kind of trees
Via Valletta-Notabile	170	Pine
Lia Road	8	Ficus
Do.	7	Oleander
Ta Bria, L/o Siggieui	29	Ailanthus
Harper Area, Floriana	69	Ficus
Do. do.	4	Cercis
Do. do.	2	Olive
Do. do.	4	Caesalpinia
Do. do.	6	Shrubs
Vallone Misida	50	Schinus
Piazza S. Giorgio	12	Ficus
Ta Ciappuna, Marsa	4	do.
Do. do.	3	Schinus
Valletta Main Ditch	6	Ligustrum
Do. do.	2	Sapindus
Do. do.	9	Celtis
Do. do.	20	Melia
Do. do.	1	Ficus

Public Nurseries—Malta.

17. During the year, 1,332 trees and shrubs have been furnished from the Public Nurseries at Victoria Gate, Tax-xeuc, Tarscien, St. Philip's, Floriana and St. Paul's Rabato, tal Cmand, Lia, to meet the requirements of the Public Gardens and Plantations, and 171 ornamental trees, 207 citrus trees and 90 fruit trees have been supplied to private growers.

18. The amount collected from the sale of trees, firewood, etc., from the Public Nurseries and Plantations was £102. 14. 11, as against £112. 2. 3, last year.

Villa Rundle, Public Plantations and Nurseries—Gozo.

19. During the year, 1 ornamental tree and 108 shrubs have been added, and 14 trees and 52 shrubs have been replaced.

20. The number of trees added to the Public Plantations along roads and open spaces was 127, and the number of trees replaced 239.

21. The following is a detailed list of the new plantations at Gozo :—

Locality	No. of trees	Kind of trees
Via Xlendi	4 ..	... Poplar trees
Do.	13 ...	... Mulberry trees
Do.	17 ...	... Ash trees
Ta Lord, Migiarro	8 ...	... Oleander trees
Strada Concezione, Kala	21 ...	... do.
Via Nadur	26 ...	... Mulberry trees
Do.	11 ...	... Poplar trees
Strada S. Maria, Via Kaijar	27 ...	... Mulberry trees

22. 131 fruit trees have been supplied from "Tal Hleuua" Nursery, Kercem, to private growers on payment, and in response to applicants 1,000 scions of fruit trees have been distributed, free of charge.

23. The following is a detailed list of fruit trees, and fruit tree-stocks available at "Tal Hleuua" Nursery :—

Early Peaches	40	in 2	varieties
Other Peaches	8	,, 2	,,
Nectarines	36	,, 3	,,
Plums	121	,, 8	,,
Almonds	21	,, 2	,,
Pears	4		
Apples	8	,, 2	,,
Cherries	3	,, 3	,,
Pecan Nuts	262		
Walnuts	36		
Loquats	11		
Pomegranates	30		
Apricots	13	,, 3	,,
Figs	6		
Olives	40		
Carobs	155		
Bitter Almonds	442		
Mulberies	2		
Wild Plum	112		
Wild Pear	21		
Wild Cherry	36		
Hazel nuts	8		
Seville Orange	506		
Sweet Orange	36		
Bahia Orange	2		
Mandarine Orange	62		
Pistaccia Terebinthus	30		

AMERICAN VINE NURSERIES.

24. The American Vine Nurseries in Malta and Gozo, contain 22,584 vines grown as mother plants.

25. The number of cuttings planted this season in the American Vine Nurseries at Malta and Gozo was 440,900.

26. A total of 6,000 cuttings have been grafted by the whip and tongue method (bench grafting).

27. The following is a detailed list of the number of rootlings and grafted American vines supplied in Malta and Gozo, on payment, or free of charge for experimental purposes;—

Malta :—	
Rootlings, sold	47,800
Rootlings, given free of charge	50
Graftlings, sold	514
Graftlings, given free of charge	50
Gozo :—	
Rootlings, sold	115,800

28. All demands for American Vines have been successfully met, and a surplus stock of 12,700 rootlings and 5,000 grafted vines have been replanted in the nurseries.

29. The amount realized from the sale of American Vines totalled £166. 17. 1 viz :—Malta £54. 19. 7, and Gozo £111. 17. 6, as against a total of £158. 15. 1, collected in 1931-32.

I have, etc.,

JOHN BRIFFA,

Superintendent of Public Gardens,
Plantations and Nurseries.

APPENDIX I.

EXPENDITURE.

The expenditure for the financial year 1932-33 amounts to £17,772. 2. 2. as hereunder detailed:—

A. PERSONAL EMOLUMENTS

Annual Expenditure:

Office	£1,550 13 10	
Experimental Farms	528 10 0	
Gardens & Plantations	5,638 5 3	
Plant Pathology	639 5 0	
Viticulture	526 6 6	
		£8,883 0 7

B. OTHER CHARGES

Annual Expenditure:

Office	£1,342 5 6 *	
Experimental Farms	1,323 11 1	
Gardens & Plantations	3,610 2 0	
Plant Pathology	711 16 11	
Viticulture	507 12 10	
		£7,495 8 4
Extraordinary Expenditure		1,393 13 3
Total		£17,772 2 2

The expenditure in the preceding financial year amounted to £16,707. 14. 0.

REVENUE.

The amount of Revenue collected during the year was £2,074. 16. 3 as against £1,811. 2. 3 in 1931-32.

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* Including £576. 0. 0. subsidies to the Società Economico Agraria", Board of Agriculture for Gozo, Malta Horticultural Society, Malta Horse Show and for the encouragement of modern bee-keeping, and £44 as part contribution to the Imperial Bureau of Entomology, and £20 contribution to the Imperial Agricultural Bureau.